OM-1515 052 299E
November 1994

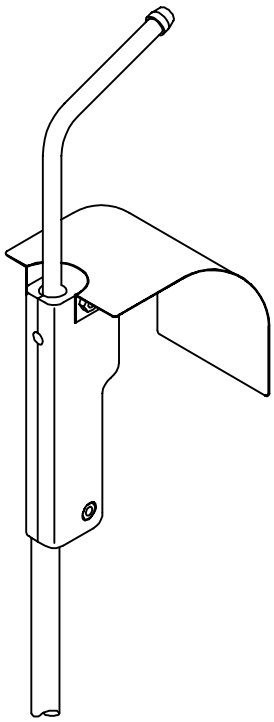
Processes

Flux Cored (FCAW) Welding

Description

Air-Cooled Gun

GA-40GL



OWNER'S MANUAL

Visit our website at
www.MillerWelds.com

From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide which exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

ISO 9001 REGISTERED QUALITY SYSTEM

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets. **To locate your nearest distributor or service agency call 1-800-4-A-Miller, or visit us at www.MillerWelds.com on the web.**

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

Miller offers a Technical Manual which provides more detailed service and parts information for your unit. To obtain a Technical Manual, contact your local distributor. Your distributor can also supply you with Welding Process Manuals such as SMAW, GTAW, GMAW, and GMAW-P.

Miller® *The Power of Blue.*

SAFETY PRECAUTIONS FOR FCAW GUNS

⚠ WARNING

FCAW WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR.

In welding, as in most jobs, exposure to certain hazards occurs. Welding is safe when precautions are taken. The safety information given below is only a summary of the more complete safety information found in the wire feeder and welding power source Owner's Manuals. Read and follow all safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.

ELECTRIC SHOCK can kill.

1. Always wear dry insulating gloves.
2. Insulate yourself from work and ground.
3. Do not touch live electrode or electrical parts.
4. Repair or replace worn, damaged, or cracked gun or cable insulation.
5. Turn off welding power source before changing contact tip or gun parts.
6. Keep all covers and handle securely in place.

FUMES AND GASES can be hazardous to your health.

1. Keep your head out of the fumes.
2. Ventilate area, or use breathing device.
3. Read Material Safety Data Sheets (MSDSs) and manufacturer's instructions for material used.

WELDING can cause fire or explosion.

1. Do not weld near flammable material.
2. Do not weld on closed containers.
3. Watch for fire; keep extinguisher nearby.

ARC RAYS can burn eyes and skin.

1. Wear welding helmet with correct shade of filter.
2. Wear correct eye and body protection.
3. Cover exposed skin with spatter-resistant clothing.

HOT SURFACES can burn skin.

1. Allow gun to cool before touching.
2. Do not touch hot metal.
3. Protect hot metal from contact by others.

NOISE can damage hearing.

1. Check for noise level limits exceeding those specified by OSHA.
2. Use approved ear plugs or ear muffs if noise level is high.
3. Warn others nearby about noise hazard.

WELDING WIRE can cause puncture wounds.

1. Keep hands and body away from gun tip when trigger is pressed.

EMF INFORMATION

NOTE ☞

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, *Biological Effects of Power Frequency Electric & Magnetic Fields – Background Paper*, OTA-BP-E-53 (Washington, DC: U.S. Government Printing Office, May 1989): ". . . there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields can interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around the body.
4. Keep welding power source and cables as far away as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

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SECTION 1 – SAFETY INFORMATION

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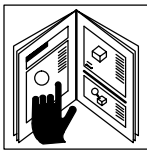
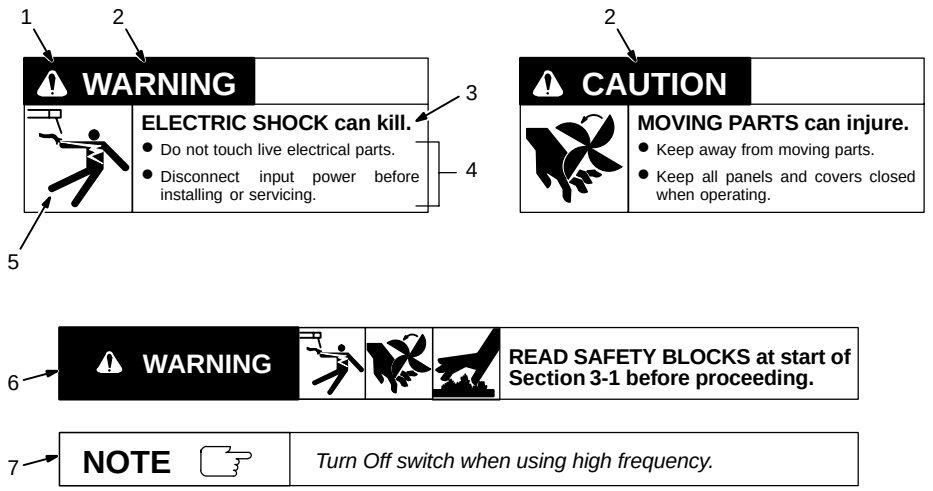


- Read all safety messages throughout this manual.
- Obey all safety messages to avoid injury.
- Learn the meaning of WARNING and CAUTION.



1 Safety Alert Symbol

2 Signal Word

WARNING means possible death or serious injury can happen.

CAUTION means possible minor injury or equipment damage can happen.

3 Statement Of Hazard And Result

4 Safety Instructions To Avoid Hazard

5 Hazard Symbol (If Available)

6 Safety Banner

Read safety blocks for each symbol shown.

7 NOTE

Special instructions for best operation – not related to safety.

Figure 1-1. Safety Information

SECTION 2 – SPECIFICATIONS

Table 2-1. Welding Gun

Specifications	Description
Rated Output	400 Amperes, DC Electrode Positive (DCEP) Or DC Electrode Negative (DCEN)
Duty Cycle	60% (See Figure 2-1)
Wire Diameter	.045 Thru 3/32 in (1.2 Thru 2.4 mm) Flux Cored Wires
Cable Length	15 ft (4.5 mm)
Weight	Net: 10-1/2 lb (4.8 kg); Ship: 12-1/2 lb (5.7 kg)

CAUTION

WELDING LONGER THAN RATED DUTY CYCLE can damage gun and void warranty.

- Do not weld at rated load longer than shown below.

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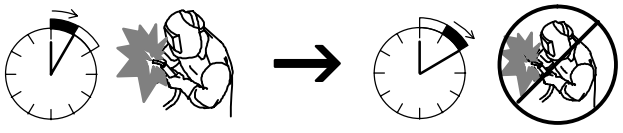
Definition

Duty Cycle is percentage of 10 minutes that gun can weld at rated load without overheating.

60% Duty Cycle At 400 Amperes



6 Minutes Welding

4 Minutes Resting

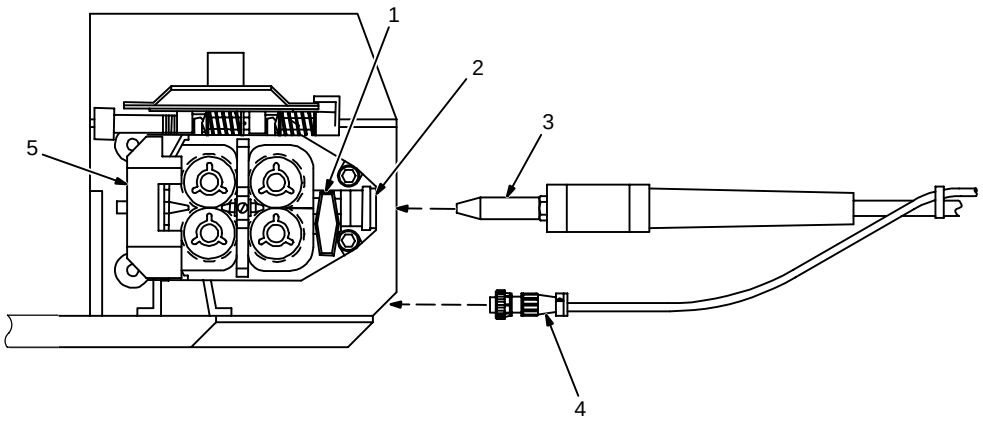
sb1.5* 8/93

Figure 2-1. Duty Cycle

SECTION 3 – INSTALLATION

⚠ WARNING | **READ SAFETY BLOCKS at beginning of manual before proceeding.**

3-1. Preparing And Installing Gun



1 Gun Securing Knob

2 Gun Block

3 Gun End

Loosen gun securing knob. Insert end into block. Position as close as possible to drive rolls without touching. Tighten knob.

4 Gun Trigger Plug

Insert plug into receptacle, and tighten threaded collar.

5 Drive Assembly Cover

Close cover.

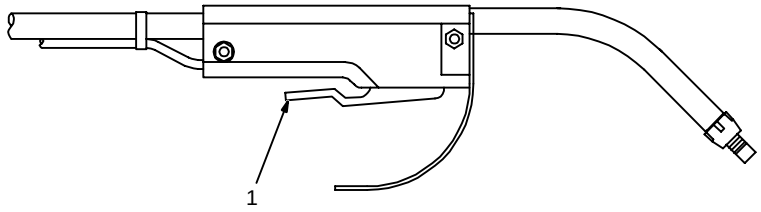
ST- 800 373

Figure 3-1. Installing Gun

SECTION 4 – OPERATION

⚠ WARNING | **READ SAFETY BLOCKS at beginning of manual before proceeding.**

4-1. Operating The Gun



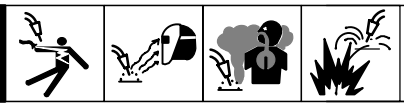
1 Trigger Switch

When pressed, energized welding wire feeds.

Ref. ST-800 374

Figure 4-1. Using Gun Switch

SECTION 5 – MAINTENANCE & TROUBLESHOOTING

⚠ WARNING  **READ SAFETY BLOCKS at beginning of manual before proceeding.**

5-1. Maintenance And Troubleshooting

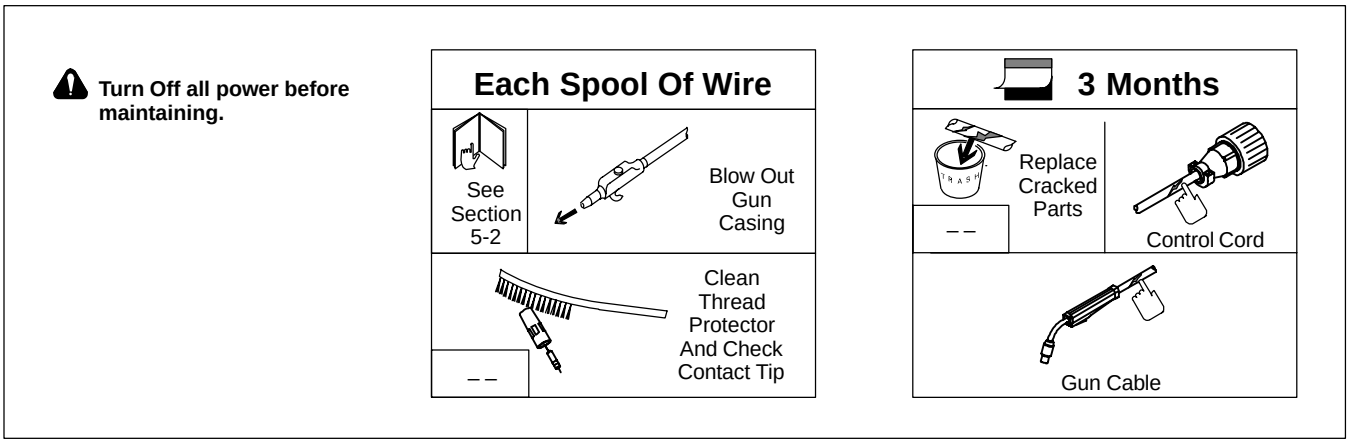


Figure 5-1. Routine Maintenance

Table 5-1. Troubleshooting

Trouble	Remedy
Wire does not feed.	Check contact tip. Check for kinks in gun cable. Check trigger connection at welding power source/wire feeder. Have nearest Factory Authorized Service Station/Service Distributor check gun trigger switch.
Wire is not energized.	Check contact tip. Check trigger connection at welding power source/wire feeder. Have nearest Factory Authorized Service Station/Service Distributor check gun trigger switch.
Wire feeds unevenly.	Check contact tip. Check for kinks in gun cable. Blow out liner and gun casing.

5-2. Changing Contact Tip And Liner

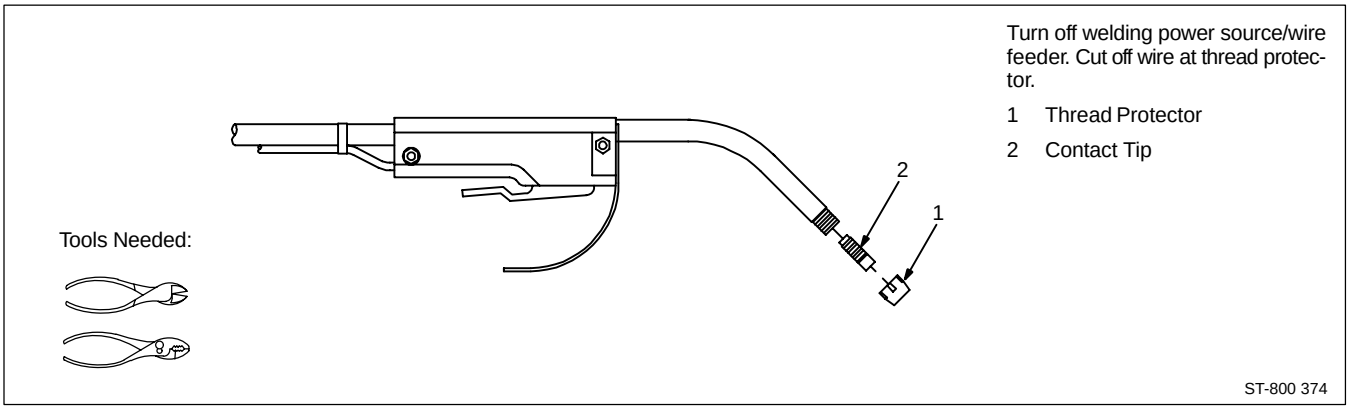


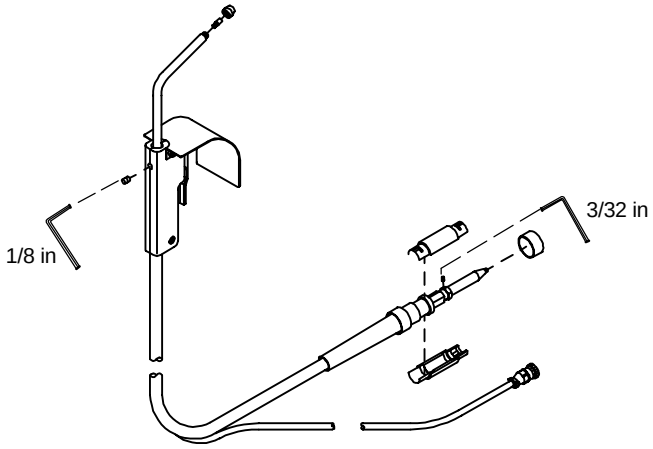
Figure 5-2. Changing Contact Tip

⚠ CAUTION

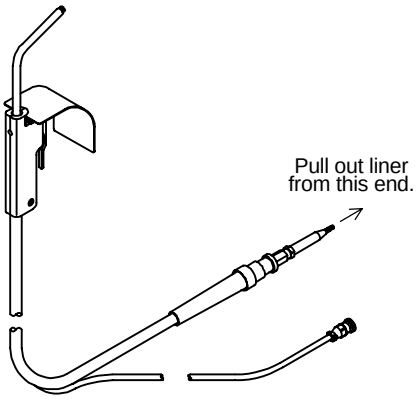
FLYING METAL CHIPS AND DIRT can cause injury and damage equipment.

- Point gun away from people and in a safe direction when blowing out with compressed air.

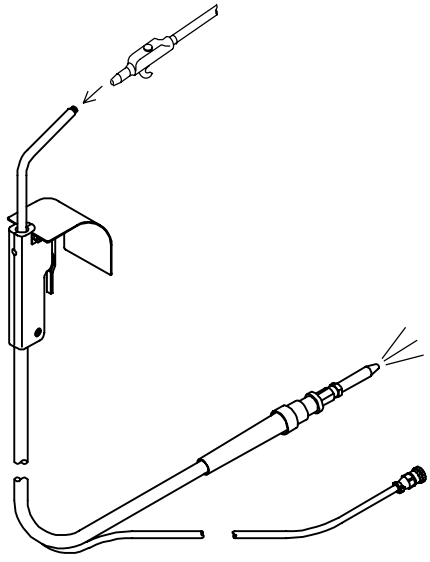
Turn off welding power source/wire feeder.



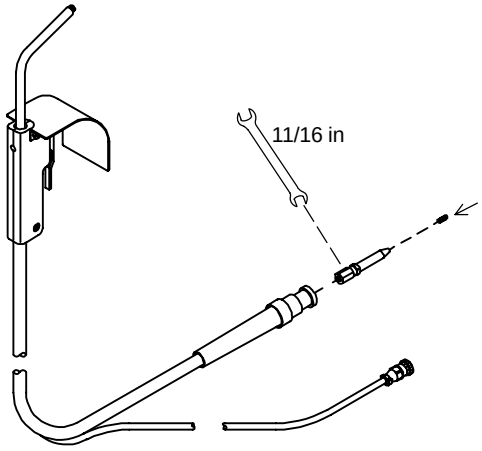
Disassemble Gun



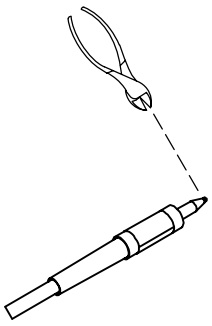
Remove Liner



Blow Out Gun Casing

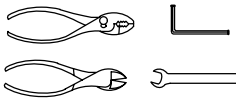


Install New Gun/Feeder Adapter
And Insert New Liner
(See Parts List)



Trim Liner

Tools Needed:



To Reassemble Gun:

Reassemble gun in reverse order of disassembly.

Be sure monocoil liner butts against wire insert (see Parts List).

Do not overtighten setscrews.

Cut liner off flush with wire outlet guide.

ST-800 375

Figure 5-3. Changing Liner And Gun/Feeder Adapter

Notes

SECTION 6 – PARTS LIST

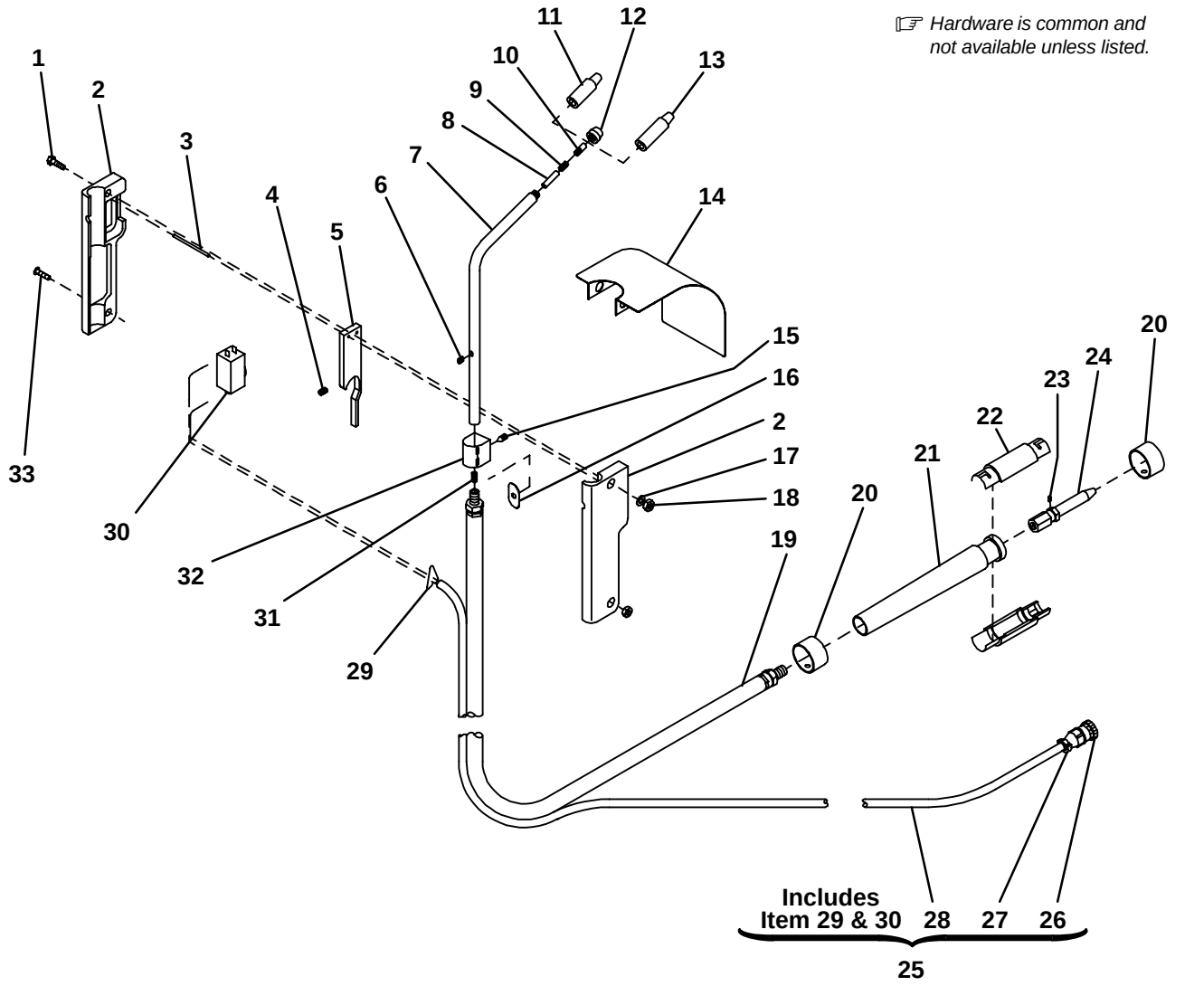


Figure 6-1. Main Assembly

Item No.	Part No.	Description	Quantity

Figure 6-1. Main Assembly

1	601 957	SCREW, cap stl hexhd .250-20 x 1.500	1
2	091 859	HANDLE, gun	1
3	076 762	PIN, spring CS .093 x .750	2
4	057 544	SPRING, cprsn .240 OD x .026 wire x 1.000	1
5	052 064	TRIGGER, gun	1
6	091 706	SCREW, set stl sch .250-28 x .312 cup point	1
7	091 841	TUBE, head	1
8	052 074	INSERT, wire	1
9	052 098	SCREW, set stl hlk .375-16 x .187	1
10	045 356	TIP, cont scr .045 wire x 1.125	1
10	090 922	TIP, cont scr .072 wire x 1.125	1
10	009 709	TIP, cont scr 1/16 wire x 1.125	1
10	052 055	TIP, cont scr 5/64 wire x 1.125	1
10	008 926	TIP, cont scr 3/32 wire x 1.125	1
11	♦052 078	WIRE GUIDE, insulated 1.750 lg (all available wire sizes)	1
12	052 059	PROTECTOR, thread	1
13	♦052 075	WIRE GUIDE, insulated 2.375 lg (all available wire sizes)	1
14	091 850	SHIELD, hand	1
15	052 095	SCREW, set stl sch .312-18 x .500 cone point	1
16	601 856	NUT, weld .312-18	1
17	602 207	WASHER, lock stl split .250	1
18	601 865	NUT, stl hex full .250-20	2
19	091 704	CABLE CONDUIT	1
20	049 312	RING, locking handle	2
21	112 884	STRAIN RELIEF, extension gun end	1
22	091 860	STRAIN RELIEF	1
23	602 173	SCREW, set stl sch 10-32 x .250 cup point	1
24	094 816	ADAPTER, gun/feeder (.045 wire)	1
24	091 843	ADAPTER, gun/feeder (.072 – 3/32 wire)	1
25	091 836	CABLE, switch (consisting of)	1
26	079 878	CONNECTOR & PINS, (consisting of)	1
	079 535	CONNECTOR, circ pin push-in 14-18ga	4
27	048 834	CONNECTOR, circ clamp str rlf sz 11	1
28	604 525	CABLE, port No. 18 2/c (order by ft)	16ft
29	053 132	STRAIN RELIEF, cable	1
30	000 369	SWITCH, lim 10A 125/250VAC DPST	1
31	083 945	LINER, monocoil .030-.045 wire x 16ft 6 in	1
31	171 944	LINER, monocoil 1/16 – 5/64 wire x 15ft	1
32	052 071	CLAMP, tube head	1
33	052 919	SCREW, mach stl rdh .250-20 x .875	1

♦ OPTIONAL

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Notes

Notes

Notes

Warranty Questions?

Call
1-800-4-A-MILLER
for your local
Miller distributor.

Your distributor also gives you ...

Service
You always get the fast, reliable response you need. Most replacement parts can be in your hands in 24 hours.

Support
Need fast answers to the tough welding questions? Contact your distributor. The expertise of the distributor and Miller is there to help you, every step of the way.

Miller
The Power of Blue.

TRUE BLUE® WARRANTY

Effective January 1, 2000
(Equipment with a serial number preface of "LA" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY – Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts – 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Supplies
   * Intellitig
   * Engine Driven Welding Generators **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 1 Year — Parts and Labor
   * DS-2 Wire Feeder
   * Motor Driven Guns (w/exception of Spoolmate 185 & Spoolmate 250)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * Induction Heating Power Sources
   * Water Coolant Systems
   * HF Units
   * Grids
   * Maxstar 140
   * Spot Welders
   * Load Banks
   * Miller Cyclomatic Equipment
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction Heating Coils and Blankets
   * APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate 185 & Spoolmate 250
   * Canvas Covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at Appleton, Wisconsin, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

TO THE EXTENT PERMITTED BY LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MILLER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY.

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Some states in the U.S.A. do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, so the above limitation or exclusion may not apply to you. This warranty provides specific legal rights, and other rights may be available, but may vary from state to state.

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Owner's Record

Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

Address

City

State Zip

For Service

Call 1-800-4-A-Miller or see our website at www.MillerWelds.com to locate a DISTRIBUTOR or SERVICE AGENCY near you.

Always provide Model Name and Serial/Style Number.

Contact your Distributor for:	Welding Supplies and Consumables
	Options and Accessories
	Personal Safety Equipment
	Service and Repair
	Replacement Parts
	Training (Schools, Videos, Books)
	Technical Manuals (Servicing Information and Parts)
	Circuit Diagrams
	Welding Process Handbooks
Contact the Delivering Carrier for:	File a claim for loss or damage during shipment.
For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.	

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